

Wayne Township Public Schools Board of Education

# ESIP: Energy Savings Improvement Programs (ESIP)

Presenters:

John Maso, Director of Facilities

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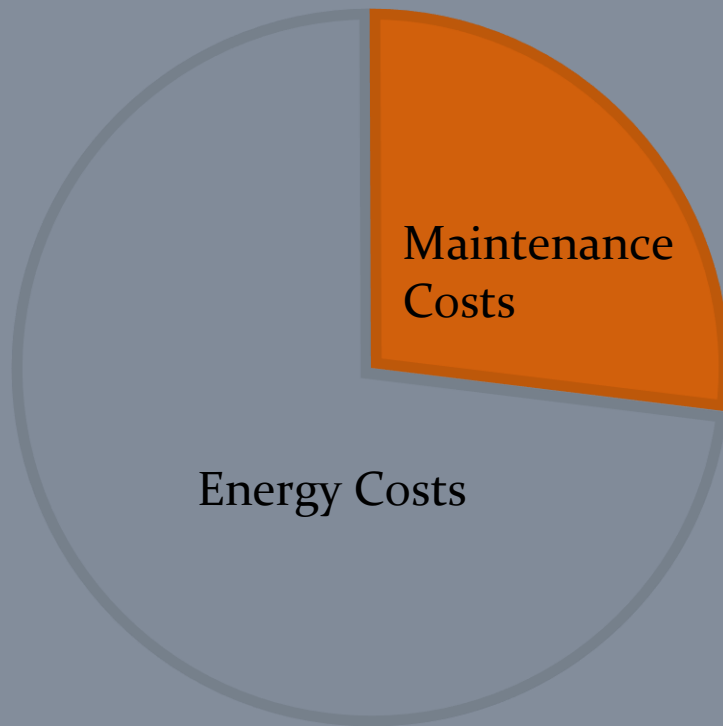
April 12, 2018

## **ENERGY SAVINGS IMPROVEMENT PROGRAM:**

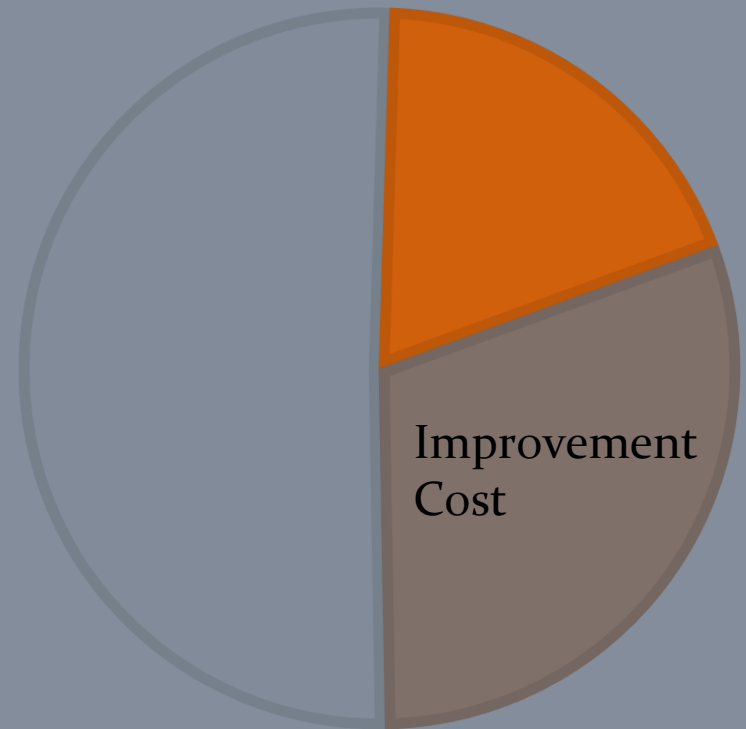
- **Legislature Enacted 2009**
- **Funding Mechanism for Capital**
- **Focused on Energy Savings**
- **BPU Involved with Checks & Balances**
- **Energy Savings Company (ESCO)**
- **Energy Savings Improvement Plan (ESIP)**

# Wayne Township Public Schools Board of Education

## PRE ENERGY CONSERVATION MEASURES



## POST ENERGY CONSERVATION MEASURES



# Purpose of the Energy Audit & ESIP

To Identify Energy Related Improvements to Aged Building Shells & Electro-Mechanical Infrastructure Equipment having Inefficiencies that Consume Electric & Natural Gas Utilities.

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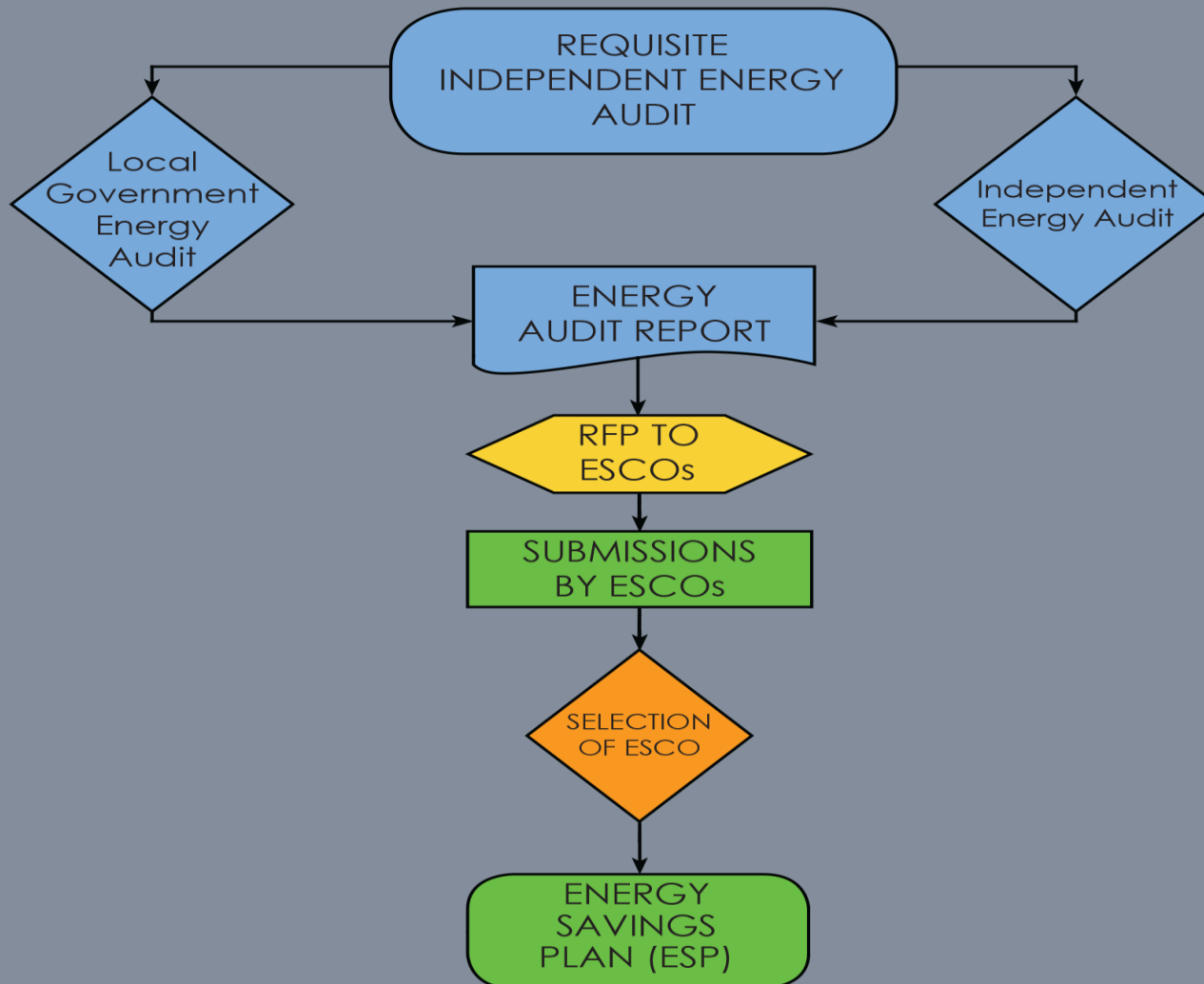
Energy Efficient Consumption of Utilities Produces Energy Savings Resulting from the Improvements Made.

Primary Energy Conservation Measures are:

- Hot Water & Steam Boilers
- Lighting Systems
- Building Management System

# Wayne Township Public Schools Board of Education

## "The Process"



## Wayne Township Public Schools Board of Education

### **ESCO – RFP Schedule:**

- *Free Energy Audit By BPU* *June 15, 2011*
- Energy Audit (Dome-Tech) *December 12, 2011*
- Energy Plan Presented *April 11, 2012*
- ESCO RFP to BPU *January 24, 2013*
- Advertise ESCO RFP *February 1, 2013*
- Attorney Review & Interviews *March 7, 2013*
- ESCO Selection *March 25, 2013*
- Board Award (Ameresco) *April 11, 2013*

## **ESIP- Construction Schedule**

- **Design Drawings / DOE Approvals**      **May 2014**
- **Bidding Started**      **May 2014**
- **Construction Started**      **June 2014**
- **Projects Completed & Accepted**      **January 2018**
- **Measurement & Verification Begins**      **March 2018**

# List of Energy Conservation Measures Conducted

1. Boiler Replacement
2. Lighting Systems
3. Lighting Controls
4. Exterior Lighting
5. Building Management System
6. Steam Trap Replacements
7. Pipe & Tank Replacements
8. Building Envelope
9. Vending Machine Controls
10. Premium Efficiency Motors
11. Walk-In Freezer / Cooler Controllers
12. High Efficiency Transformers
13. Stratification Fans
14. Variable Frequency Drives
15. Computer Load Management



# ENERGY SAVINGS IMPROVEMENT PROJECT (ESIP)

## Infrastructure ECM Improvements by Building

| WTPS FACILITY   | Lighting System Improvements | Lighting Controls | Exterior Lighting | Energy Management Systems | Steam Trap Replacements | Pipe & Tank Insulations | Building Envelope Improvements | Vending Machine Controls | Premium Efficiency Motors | Walk-In Freezer/Cooler Controllers | High Efficiency Transformers | Replace Boilers | Destratification Fans | Variable Frequency Drives | Computer Load Management |
|-----------------|------------------------------|-------------------|-------------------|---------------------------|-------------------------|-------------------------|--------------------------------|--------------------------|---------------------------|------------------------------------|------------------------------|-----------------|-----------------------|---------------------------|--------------------------|
|                 | 1                            | 2                 | 3                 | 4                         | 5                       | 6                       | 7                              | 8                        | 9                         | 10                                 | 11                           | 12              | 13                    | 14                        | 15                       |
| RANDALL CARTER  | X                            | X                 | X                 | X                         | X                       | X                       | X                              | X                        |                           |                                    |                              |                 |                       |                           | X                        |
| THEUNIS DEY     | X                            | X                 | X                 | X                         |                         |                         | X                              |                          |                           |                                    | X                            | X               |                       |                           | X                        |
| JAMES FALLON    | X                            | X                 | X                 | X                         |                         |                         | X                              | X                        |                           |                                    | X                            |                 |                       |                           | X                        |
| JOHN F. KENNEDY | X                            | X                 | X                 | X                         |                         |                         | X                              |                          |                           |                                    | X                            | X               |                       |                           | X                        |
| LAFAYETTE       | X                            | X                 | X                 | X                         | X                       | X                       | X                              | X                        |                           |                                    | X                            |                 | X                     |                           | X                        |
| PACKANACK       | X                            | X                 | X                 | X                         | X                       | X                       | X                              | X                        |                           |                                    |                              |                 |                       |                           | X                        |
| PINES LAKE      | X                            | X                 | X                 | X                         | X                       | X                       | X                              |                          |                           |                                    | X                            |                 |                       |                           | X                        |
| RYERSON         | X                            | X                 | X                 | X                         |                         |                         | X                              |                          |                           |                                    | X                            | X               | X                     |                           | X                        |
| A.P. TERHUNE    | X                            | X                 | X                 | X                         |                         |                         | X                              |                          |                           |                                    | X                            | X               |                       |                           | X                        |
| ANTHONY WAYNE   | X                            | X                 | X                 | X                         |                         |                         | X                              | X                        |                           | X                                  | X                            |                 | X                     |                           | X                        |
| SCHUYLER-COLFAX | X                            | X                 | X                 | X                         |                         |                         | X                              | X                        | X                         | X                                  |                              |                 | X                     | X                         | X                        |
| G. WASHINGTON   | X                            | X                 | X                 | X                         |                         |                         | X                              | X                        | X                         | X                                  |                              | X               | X                     |                           | X                        |
| WAYNE HILLS     | X                            | X                 | X                 | X                         |                         |                         | X                              | X                        | X                         | X                                  |                              | X               | X                     |                           | X                        |
| WAYNE VALLEY    | X                            | X                 | X                 | X                         | X                       | X                       | X                              | X                        | X                         | X                                  | X                            |                 | X                     |                           | X                        |
| PREAKNESS       | X                            | X                 | X                 | X                         | X                       | X                       | X                              | X                        |                           |                                    |                              |                 |                       |                           | X                        |
| ADMINISTRATION  | X                            |                   | X                 | X                         |                         |                         | X                              |                          | X                         |                                    |                              |                 |                       |                           | X                        |

# District Wide Facts:

Age of the District's 14 Schools:

\* Six Schools are 65 years old \* Seven schools are 56 years old \* One school is 13 years old

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- Across the 14 schools are 35 hot water & steam Boilers
- The ESIP Project focused on 15 aged old boilers across 8 schools, the average age is now 3 years
- 13 Hot-Water Boilers (Wayne Hills, George Washington, JF Kennedy, Ryerson, T. Dey & AP Terhune) 2 Steam Boilers in 2 Schools (WVHS & Packanack ES)

## Remaining Boilers:

- Twelve Boilers average age is 18 years across five schools
- Eight boilers average age is 42 Years across four schools
- Projected Plan is to replace (1) Boiler at four schools using Incentive-3 Rebate funds
- Estimate cost per Boiler is \$200K
- Incentive-3 Rebate

# Original Infrastructure

## Old Boiler Vessel – Wayne Hills High School





# Efficiencies in Infrastructure

New AERCO Energy Efficient Boilers – Wayne Hills High School - ESIP



# Original Infrastructure

## Older Interior Lighting Fixtures





# Efficiencies in Infrastructure

## New Interior Lighting Fixture - ESIP



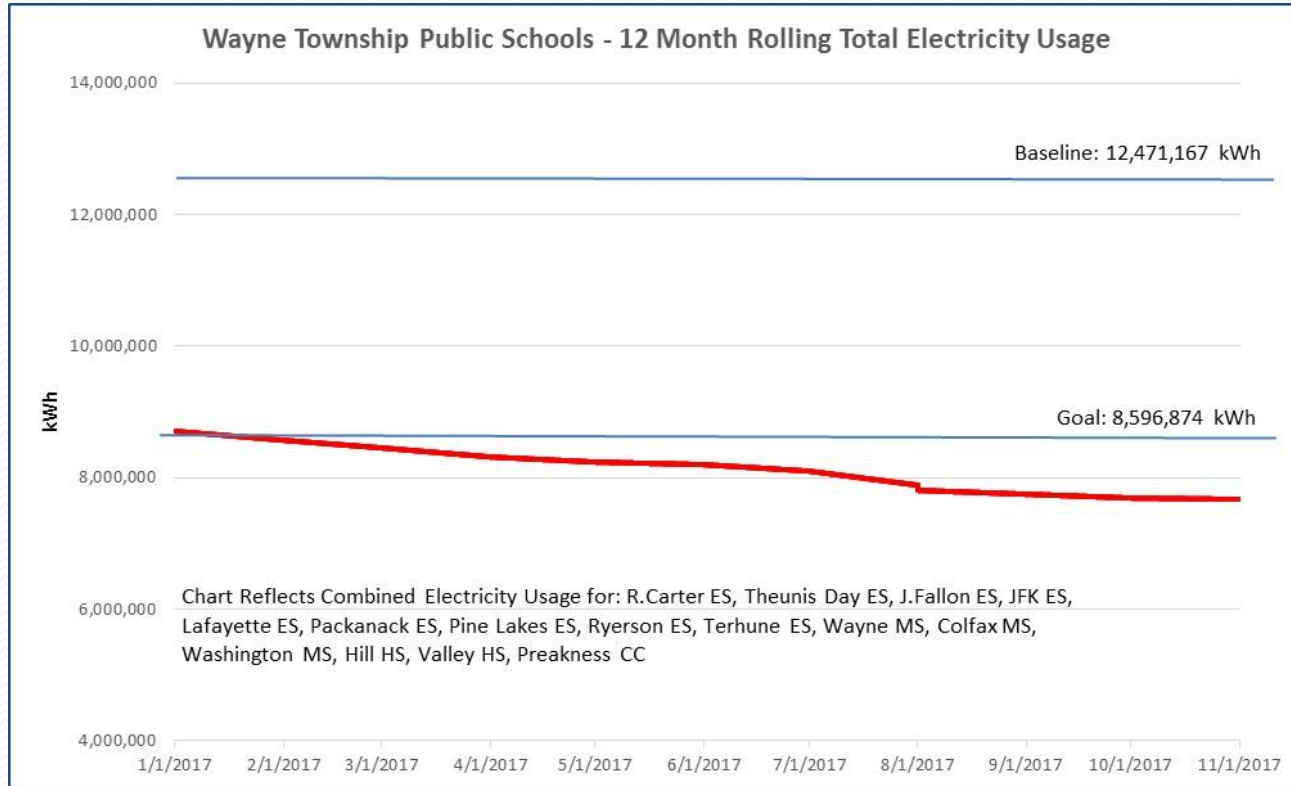
# Ameresco Projected Financial Projections

- **Utility Energy Savings**

|                    |     |
|--------------------|-----|
| Electric kWH       | 30% |
| Natural Gas-Therms | 30% |

- **Rebate Incentives**

|                 |    |                   |
|-----------------|----|-------------------|
| 1 <sup>st</sup> | \$ | 68,000            |
| 2 <sup>nd</sup> | \$ | 815,000           |
| 3 <sup>rd</sup> | \$ | 370,000-\$815,000 |





# Ameresco Measurement & Verification

- **Measurement & Verification Starting March/April 2018**
- **Incentives / Grants**
  - 1<sup>st</sup> \$ 68,000 (obtained)**
  - 2<sup>nd</sup> \$ 815,000 (obtained)**
  - 3<sup>rd</sup> \$ 815,000 (pursuing)**

# Moving Forward

- **Updates will be Reported out at Future Facilities & Transportation Committee Meetings**

# Questions